We claim:

1. A laser weld monitoring system capable of assessing a weld quality of welding using a laser, said system comprising:

at least one sensor capable of capturing a weld characteristic of welding using said laser, said weld characteristic having a plurality of attributes; and

data acquisition and processing equipment adapted for storing and analyzing said weld characteristic,

wherein a user performs a plurality of welds to capture at least one weld characteristic for each weld, determines the weld quality of each weld, runs at least one of a library of algorithms associated with the attributes on said at least one weld characteristic for each weld to generate a single value output for the associated attribute, and selects an attribute indicative of the weld quality by correlating the single value outputs of said at least one algorithm with the weld qualities of the welds.

2. The laser weld monitoring system according to claim 1, wherein the user performs the welds at different weld conditions to correlate a variation in the weld quality with the variation in the single value output for said at least one algorithm as the weld conditions change.

3. The laser weld monitoring system according to claim 1, wherein the user determines the weld quality of each weld by performing a physical testing.

4. The laser weld monitoring system according to claim 1, wherein the user determines the weld quality of each weld by performing a visual inspection.

5. The laser weld monitoring system according to claim 1, wherein said at least one sensor includes at least one selected from a group consisting of a photodiode, a microphone, a monitor sensor, a plasma sensor and a machine vision sensor.

6. The laser weld monitoring system according to claim 1, wherein said weld characteristic includes at least one selected from a group consisting of a reflection signal, an IR signal and an acoustic signal.

7. The laser weld monitoring system according to claim 1, wherein said attributes include at least one selected from a group consisting of a maximum, a minimum, a slope, an integration, at least one algebraic function and at least one calculus function.

8. The laser weld monitoring system according to claim 1, wherein said laser is selected from a group consisting of a feedback laser, a non-feedback laser, an Nd:YAG laser, a CO_2 laser and a green laser.

9. The laser weld monitoring system according to claim 1, further comprising a CCTV camera capable of capturing images of welding parts.

10. The laser weld monitoring system according to claim 1, wherein the data acquisition and processing equipment comprises a digitizer for processing said weld characteristic, wherein said digitizer comprises at least one selected from a group consisting of an oscilloscope, a

digital oscilloscope, a DSP board, a DAQ board and custom electronics.

11. The laser weld monitoring system according to claim 1, wherein the library of algorithms associated with the attributes have been predetermined by a developer of said laser weld monitoring system.

12. The laser weld monitoring system according to claim 1, wherein the library of algorithms associated with the attributes are developed by the user.

13. The laser weld monitoring system according to claim 1, wherein the system can be used for both process development and process control.

14. A method of monitoring a weld quality of a laser, said method comprising:

performing a plurality of test welds;

capturing at least one weld characteristic of each test weld, said at least one weld characteristic having a plurality of attributes;

determining the weld quality of each test weld;

running at least one of a library of algorithms associated with the attributes on said at least one weld characteristic for each weld to generate a single value output for the associated attribute; and

selecting an attribute indicative of the weld quality by correlating the single value outputs of said at least one algorithm with the weld qualities of the test welds.

15. The method according to claim 14, wherein performing the plurality of test welds comprises performing the testing welds at different weld conditions to correlate a variation in the weld quality with the variation in the single value output for said at least one algorithm as the weld conditions change.

16. The method according to claim 14, wherein running at least one of a library of algorithms comprises generating the single value output for at least one attribute selected from a group consisting of a maximum, a minimum, a slope, an integration, at least one algebraic function and at least one calculus function.

17. The method according to claim 14, wherein determining the weld quality comprises performing a weld strength test.

18. The method according to claim 14, wherein determining the weld quality comprises performing a weld interface area test

19. The method according to claim 14, further comprising defining good and bad welds based on the single value output of the algorithm associated with the selected attribute.

20. The method according to claim 19, further comprising:

performing a weld;

capturing the weld characteristic of the weld; and

running the algorithm associated with the selected attribute on the weld characteristic for the weld to generate the single value output.

21. The method according to claim 20, further comprising determining the weld to be either a good weld or a bad weld by comparing the single value output for the weld with the definition of good and bad welds.

22. A method of adjusting a focus height of a laser, said method comprising:

performing a plurality of test welds, each test weld being performed at a different focus height about a predetermined initial focus height;

capturing a temperature characteristic of each test weld; and

determining the focus height that results in a maximum rising slope in the temperature characteristic as a correct focus height.